

I. Amendments to the Claims

This listing of claims replaces without prejudice all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A post-injection-molding cooling forming apparatus configured to cooperate with a vacuum structure for cooling the vacuum-forming of a just-injection-molded malleable injection molded plastic article received therein, comprising:

a porous member formed from a porous material, the porous member including (i) an inside surface that is profiled to substantially reflect a shape of at least a portion of an outside surface of the injection-molded plastic article, and (ii) a vacuum coupling structure;

wherein the vacuum coupling structure of the porous member is configured to cooperate with the vacuum structure ~~in use,~~ to provide a reduced pressure adjacent the inside surface of the porous member to cause the portion of the outside surface of the malleable molded plastic article ~~within the porous member,~~ to contact the inside surface of the porous member so as to cause a conductive cooling ~~substantial portion~~ of the outside surface of the malleable article ~~, upon cooling, to attain a profile substantially~~

~~corresponding to the profile of the inside surface of the porous member.~~

2. (Currently Amended) The cooling forming apparatus of claim 1-56, wherein the vacuum coupling structure comprises an outside surface of the porous member.

3. (Currently Amended) The cooling forming apparatus of claim 1-56, wherein the vacuum coupling structure comprises at least one channel formed in an outside surface of the porous member.

4. (Currently Amended) The cooling forming apparatus of claim 1-56, wherein at least a portion of an outer surface of the porous member comprises a mounting surface configured to connect with an inside surface of a cooling tube.

5. (Currently Amended) The cooling forming apparatus of claim 1-56, further configured to cooperate with a plug for providing a closed end to the profile of the inside surface of the porous member, the plug being shaped to correspond to a domed end portion of the molded plastic article.

6. (Currently Amended) The cooling forming apparatus of claim 3-58, further comprising at least one vacuum channel configured to be coupled to the at least one channel formed in an outside surface of the porous member.

7. (Currently Amended) The cooling forming apparatus of claim 1-56, wherein the inside surface of the porous member includes a closed end that is shaped to correspond to a domed end portion of the molded plastic article.

8. (Currently Amended) The cooling forming apparatus of claim 7-62, wherein the porous member further includes a channel extending therethrough at a base of the closed end thereof, the channel being configured to be connected to a low pressure, source to draw the molded plastic article into the tube assembly.

9. (Currently Amended) The cooling forming apparatus of claim 1-56, wherein the porous member has porosity in the range of about 3-20 microns.

10. (Currently Amended) The cooling forming apparatus of claim 1-56, wherein the porous member comprises a porous aluminum.

11. (Currently Amended) The cooling forming apparatus of claim 1-56, further including a cooling structure configured for connection with a heat dissipation path, for cooling the molded plastic article in contact with the inside surface of the porous member.

12. (Currently Amended) A device for receiving and cooling a just-injection-molded semi-molten plastic article, the cooling device comprising:

a porous member having (i) an internal surface configured to receive the semi-molten article, and (ii) an external surface;

wherein ~~, in use,~~ the porous member is configured such that the just-injection-molded semi-molten article is moved substantially against the internal surface by a pressure differential between the external surface and the internal surface ~~semi-molten article~~.

13. (Currently Amended) The device according to claim 12-67, further comprising low pressure structure for applying the pressure differential between the external surface and the semi-molten article.

14. (Currently Amended) The device according to claim 12-67, wherein the porous member is configured as a removable insert to be removable from an injection molding tube assembly.

15. (Currently Amended) An apparatus for use in a post mold device for the vacuum-forming of a just-molded malleable injection molded plastic article, comprising:

a tubular porous member configured to be removably installed within the post mold device, the tubular porous member having (i) a porous inside surface that is profiled to substantially reflect at least a portion of an outside surface of the molded plastic article, and (ii) a porous outside surface, the porous inside surface and the porous outside surface being configured to provide a pressure differential therebetween to cause a nonsolid molded plastic article within the porous member to contact at least a portion of the porous member inside surface so that a profile of the molded plastic article reflects a profile of the porous member inside surface.

16. (Currently Amended) The apparatus according to claim 15-70, further comprising a channel configured to provide low pressure to the tubular porous member outside surface.

17. (Currently Amended) The apparatus according to claim 15-70, further comprising a vacuum device, coupled to the channel, to cause both (i) an exterior cylindrical surface of the molded plastic article and (ii) an exterior distal end of the molded plastic article to contact the interior surface of the porous member.

18. (Currently Amended) A forming apparatus configured to cooperate with an evacuation pump for the vacuum-forming of a just-molded malleable injection molded plastic article, comprising:

a porous member having a porous inside surface that is profiled to substantially reflect at least a portion of an outside surface of the molded plastic article and that supports the evacuation of air therethrough to cause ~~in use,~~ a malleable molded article within the at least one porous member to expand to contact the porous inside surface to cause a substantial portion of the outside surface of the malleable article, upon cooling, to attain a profile substantially corresponding to the profile of the inside surface of the porous member.

19. (Currently Amended) A tool configured to be carried by an injection molding robot arm, comprising:

a carrier configured to ~~(i)~~ be coupled to the injection molding robot arm, said carrier carrying and ~~(ii)~~ ~~to carry~~ a at least one molded article cooling device;

at least one porous member installed in the at least one molded article cooling device, the at least one porous member having a porous inside surface that supports the evacuation of air therethrough to cause a malleable molded article within the at least one porous member to expand to contact the porous inside surface; and

an evacuation structure configured to evacuate the air through the at least one porous member.

20. (Currently Amended) An injection mold robot, comprising:

an arm member configured to be disposed adjacent an injection molding machine;

a carrier configured to ~~(i)~~ be coupled to the arm member, said carrier carrying and ~~(ii)~~ ~~carry~~ at least one molded article cooling device;

at least one ~~of~~ porous member configured to be removably installed in the at least one molded article cooling device, the at least one porous member having a porous inside surface that supports the evacuation of air therethrough to cause a malleable molded article within the at least one porous member to expand to contact the porous inside surface; and

an evacuation structure configured to evacuate the air through the at least one porous member.

21. (Original) An injection molding machine, comprising:

mold structure that molds at least one plastic articles;

at least one cooling cavity configured to hold and cool the at least one plastic article after they are molded by the mold structure;

at least one porous member configured to be removably installed in the at least one cooling cavity, respectively, the at least one porous member having a porous inside surface that supports the evacuation of air therethrough to cause a non-solid molded plastic article within the at least one porous member to expand and contact the at least one porous member inside surface, a profile of the molded plastic article corresponding to a profile of the porous member inside surface; and

an evacuation structure configured to evacuate the air through the at least one porous member.

Claims 22-25 (Cancelled)